

dors are connected with the external air by eighty arched openings in each of the three lower stories. To the piers which divide these arches are attached three-quarter columns, presenting a continuous façade, in three stories, of eighty columns, backed by piers with eighty open arches between them, each tier being of a different order of architecture,—the lowest of plain Roman Doric, or, perhaps, rather Tuscan, the next Ionic, and the third Corinthian. The highest tier is of quite a different character, as it merely consists of a wall, without corridors, against which, instead of columns, are placed pilasters of the Corinthian order, and in the wall between them are windows, in the alternate intercolumniations only, and therefore, of course, forty in number. The whole is crowned with a bold entablature, pierced with holes above the brackets which supported the feet of the maats upon which the *velarium* or awning was extended, and above the entablature is a small attic. The total height of that part of the building which remains entire,—about three-eighths of the whole circumference,—is 157 feet; the stories being respectively about 30, 38, 38, and 44 feet high.

The internal arrangement can be best understood by referring to the section of the corridors, stairs, and seats:—

- I. II. III. IV. The four stories of the exterior.
- A The arena.
 - B The podium.
 - C, D, E, F The four corridors.
 - G, H, I The three meniaua.
 - K The upper gallery.
 - L The terrace over it.
 - R The space on the summit of the wall for the emplacements of the *velarium*.
 - Z The steps which surrounded the building on the outside.
 - a Stairs from the third colonnade to the podium.
 - b Short transverse steps from the podium to the first *meniauum* (compare the plan).
 - c, d Stairs from the ground story to the second; whence the second *meniauum* was reached in two ways, c and d.
 - e Steps to the first *præciuctio*, from which there were short transverse steps (f) to the second *meniauum*.
 - g Stairs leading direct from the corridors of the second story to the second *meniauum*, through the vomitorium a.
 - A Stairs leading from the floor of the second story to the small upper story, whence other stairs (h) led to the third story, from which access was obtained to the upper part of the second *meniauum* by doors (j) in the upper wall in the second corridor, g.
 - k Stairs from the second story to the mezzanine, or middle story, whence access was obtained to the third *meniauum* by passages (y).
 - l Stairs in the mezzanine, leading to the upper part of the third *meniauum*, and to the gallery, K.
 - m Steps from the gallery to the terrace over it.
 - n Steps from that terrace to the summit.
 - o, p Grated openings to light the two inner corridors.
 - q See under A.
 - r Windows to light the mezzanine.
 - s Windows of the gallery.
 - t Rest, and
 - w Loop, for the mast of the *velarium*, y.

Although, from the time of its erection, it was the only amphitheatre in Rome sufficing from its immense size for the entire population, there were several in the provincial towns—some built like the earlier ones of Rome itself of wood, and of which there are now, of course, no remains; but there are in many of the larger cities of the Roman empire important ruins of amphitheatres of stone, the principal of which bring at Verona, Pæstum, Pompeii, and Capua in Italy; at Nîmes, Arles, and Fréjus in France; at Pola in Istria; at Syracuse, Catania, and some other cities in Sicily; but as they were mostly constructed after the Flavian model, farther mention would be unnecessary.

The means by which Rome and other cities of the empire were supplied with water we shall find described under the heading "Aquaductus;" of this structure the Greeks had probably little knowledge before the Roman conquest, although that there was amongst them at an early period powers of hydraulic engineering is shown by the drainage tunnels of the lake Copais,—and the similar works of Phæax at Argimontum; and we have an instance, too, of a channel of water being carried through a mountain 900 Greek feet high, to

supply the city of Samos, the length of the tunnel being 7 stadia, or about 1,420 yards. By the Greek regulations water might be fetched from the public fountains or wells to a distance of four stadia: beyond this persons were compelled to dig their own wells, but if any one dug to a depth of 60 Greek feet without finding water he was permitted to take from his neighbour's well six *xoig* (equal to about 36 pints) twice daily. The Romans were in a different position with respect to the supply of water from most of the Greek cities. They at first had recourse to the Tiber and to the wells sunk in the city; but the water obtained from those sources was very unwholesome, and must have proved insufficient from the growth of the population, to say nothing of the supplies afterwards required for the *Naumachia* and public baths. It was this necessity that led to the invention of aqueducts in order to bring pure water from a considerable distance, from the hills in fact which surround the *Compagna*. The writer properly scorns the notion that the Romans built aqueducts because they did not know that water finds its own level! The date of the first is assigned by Frontinus to the year 313 B.C., and was known as the *Aqua Appia*, being commenced by the Censor Appius Claudius Cæcus (to whom Rome also was indebted for her first great road), the number gradually increasing, partly by the munificence of individuals and partly at the public expense, till in the time of Procopius they amounted to fourteen: of these by far the most magnificent were the *Aqua Claudia* and the *Anio Novus*, both commenced by Caligula in A.D. 36, and finished by Claudius, A.D. 50, the length of the former was 46,406 *passus* (nearly 46½ miles), of which 9,567 were on arches. Of still greater length was the *Anio Novus*, it being the longest, nearly 59 miles (58,700 *passus*) and the highest, some of its arches being 109 feet high, of all the aqueducts. In the neighbourhood of the city these two were united, forming two channels on the same arches—the *Claudia* below, the *Anio Novus* above: an interesting monument connected with these aqueducts, is the gate now called *Porta Maggiore*, which was originally a magnificent double arch, by means of which the aqueduct was carried over the *Via Labicana* and the *Via Prænestina*. The *Porta Labicana* was blocked up by Honorius; but his barbarous constructions have lately been cleared away. Over the double arch are three inscriptions, which record the names of Claudius as the builder, and of Vespasian and Titus as their restorers. Great pains were taken by successive emperors to preserve and repair the aqueducts. From the Gothic wars they have, for the most part, shared the fate of the other great Roman works of architecture; their situation and purpose rendering them peculiarly exposed to injury in war; but still their remains form the most striking features of the *Compagna*, over which their lines of ruined arches, clothed with ivy and the wild fig-tree, radiate in various directions. Three of them still serve for their ancient use; and these three alone supply, according to Tournon, the modern city with a quantity of water much greater than that which is furnished to Paris by the Canal de l'Ourcq for a population six times as large.

As we have considered the means by which immense quantities of water were brought into the city, it may be as well for us to see to what purpose it was so extensively applied, or where was its grand outlet; this we shall, no doubt, find to have been in the *Baths*. It would be hopeless to attempt to arrange the information obtained from the writers on this subject,—Vitruvius, Lucian, Pliny the younger, Statius, and others—were it not for the help afforded us by the existence of extensive ruins of ancient baths, such as the *Thermae* of Titus, Caracalla, and Diocletian, but above all of the public baths at Pompeii, excavated 1824 and 1825, and which were found to be a complete set, constructed in all their important parts upon rules very similar to those laid down by Vitruvius, and in such good preservation that many of the chambers were complete, even to the ceilings. Such was the estimation

in which the bath was held by the Romans, that until their establishment for public use, we are told that those who sought the favour of the populace gave them a day's bathing, free of expense. Faustus, the son of Sulla, furnished warm baths and oil gratis to the people for one day; and Augustus, on one occasion, furnished warm baths and barbers, for the same period, and on another, for one whole year to the women as well as men.

In turning over the pages, we happen on the word *Thesaurus* (*θησαυρός*), a treasure-house, concerning the use of which there is some doubt. That buildings for the depositing of precious metals, arms, and other property were required, especially by kings and states, in the earliest period of civilization is evident; and tradition points to subterranean buildings in Greece, of unknown antiquity, and of peculiar formation, as having been erected during the heroic period for that purpose. Such are the treasures of Minyas, at Orchomenus, described by Pausanias, and of which some remains still exist; and those of Atreus and his sons, at Mycenæ, the chief one of which, the so-called treasury of Atreus, being still in almost a perfect state. But he concurs in our notion, that it is very questionable whether these edifices were treasuries at all, many of the best archaeologists maintaining that they were tombs. The question cannot be entered into here; a full discussion of it, with the buildings themselves described, will be found in Müller, *Archæol. d. Kunst*, and in the *Rhein Mus.* for 1834 and 1835. In the historical times, the public treasury was either in a building attached to the *ogora*, or in the *opisthodromus* of some temple.

With this we must close the volume, recommending it to the general student, as a perfect encyclopedia of ancient jurisprudence, manufacture, and of the religious, social, and military manners of the Greeks and Romans; and not simply, as he may perhaps be led to imagine from our sketch, purely architectural.

INFECTED ELEMENTS OF LONDON.

In this country of fogs, during the winter season, for three months, a mantle of haze envelopes our plains, added to which the smoke of carbonaceous fuel, called sea-coal, thickening the vapour, invests with melancholy dulness both town and city.

Were it not for the paved superficies, London would be scarcely habitable, but owing to the non-absorbing surface of granite and flagging, the metropolis is, in point of health, not inferior to other towns, and at night-time, when the fires are for the most part extinct, the atmosphere is clear, and the stars may be numbered equally well as from levels of similar elevation.

If the drainage were perfect, as it might and ought to be, certainly no part of the United Kingdom could be more favourable to longevity than this industrial hive of two millions of souls. But it is, with sewage of a very imperfect nature, stagnant; and, giving back noxious effluvia even in some of the choicest localities, those advantages which might easily be assured by an uniform and regular outfall are wholly lost, the cleanliness above only moderating the baneful effect of the oozy pestilence below.

Many of the poorer streets, lanes, and courts are as yet wholly without outlets in them: the sullage is still hoarded in cesspools, and some terraces in the very best position in the same predicament, appear to evidence either the indolence of local authorities or the inadequacy of sanitary statutes to carry out the first requisite for health—good sewage.

The noble river that traverses the bills of mortality is notoriously a common sewer: it is every year becoming more fetid: it is wholly unfit for alimentary supply nearly up to Staines: it is intolerable as a medium of traffic, and has long since ceased to be resorted to by bathers and pleasure-boats, partly from the same cause.

Something should be done to mitigate this growing evil, and as nothing short of a total abatement of the polluting sources (the sewers) can remedy this, some of the plans propounded in *THE BUILDER* for tunnels or